

REMARKS

This is in response to the Office Action of November 19, 2003. Claims 32-67 were rejected. Claims 32-55 were amended. Claims 32-67 are pending.

Applicant has amended the independent claims to clarify that Applicant's claimed invention is a graphics memory subsystem. Dependent claims 33-54 were correspondingly amended. Support for this amendment is found, for example, on page 3, lines 12-14 and the Abstract of Applicant's specification.

In the Office Action of November 19, 2003 the Examiner rejected claims 32-43, 45-48, 33-62, and 64-67 under 35 U.S.C. § 103(a) over Nielsen et al (U.S. Pat. No. 6,104,417) in view of Aleksic et al. (U.S. Pat. No. 6,469,703). Claims 44, 49-54, and 63 were rejected under 35 U.S.C. § 103(a) over Nielsen and Aleksic further in view of Ng (U.S. Pat. No. 6,205,524). Applicant respectfully traverses the rejections.

Applicant's claimed invention of independent apparatus claim 32 corresponds to a graphics subsystem having a memory controller that provides a non-partitioned view of a partitioned graphics memory to a plurality of graphics processing units. Each partition is a fraction of the graphics memory access bus size. Independent method claim 55 includes limitations corresponding to receiving data requests from graphics processing units accessing a unitary graphics memory, assigning requests to individual memory partitions, and delivering data from independently accessible memory partitions.

In regards to independent claims 32 and 55, Nielsen and Aleksic do not satisfy the element of a graphics memory of a graphics memory subsystem.

Nielsen discloses a computer system with a unified computer system memory. However, Nielsen teaches away from a graphics memory for a graphics subsystem. Nielsen is directed to the problem of eliminating the drawbacks of having a main memory and peripheral dedicated memory subsystems, such as a dedicated graphics memory, as described in column 1, lines 24-27 and column 2, lines 1-14 of Nielsen. Nielsen teaches that there are "no dedicated memory units in the computer system of the present invention aside from the unified memory" as described in column 2, lines 50-55. As can be observed by comparing Figures 1 and 2 of Nielsen, Nielsen eliminates a dedicated

graphics memory 104 and dedicated IP memory and instead teaches a unified system memory 202 that serves as the main memory, graphics memory, and IP memory. Applicant therefore respectfully submits that Nielsen teaches away from a dedicated graphics memory of a graphics subsystem.

Similarly, Aleksic is also directed to the problem of eliminating a dedicated graphics memory, as described in column 1, lines 42-45. Aleksic discloses a unified system memory which includes both CPU system and graphics data, as described in column 2, lines 55-58 of Aleksic. Applicant therefore respectfully submits that the unified system memory of Aleksic teaches away from a dedicated graphics memory of a graphics subsystem.

Additionally, independent claims 32 and 55 also require a plurality of graphics processing units. Claim 32 recites a limitation that the “memory controller [is] connected between said graphics memory access bus and said plurality of graphics processing units.” Claim 55 include a limitation of “receiving data requests from graphics processing units accessing a unitary graphics memory subsystem.” Applicant respectfully submits that Aleksic and Nielsen do not teach or suggest these elements since in both cases only a single client of the memory controller is described as performing a graphics processing function. Aleksic shows in Figure 7 that only the CPU and a single graphics engine 640 accesses the memory controller 630. Only the graphics engine 640 is described as making graphics requests of memory controller 630 and performing a graphics processing function, as for example described in column 7, lines 49-52 and column 8, lines 36-38 and 60-63. While Nielsen shows a plurality of memory clients 206, 208, 210, 212, 214, and 215, only the graphics rendering engine 208 is described as performing a graphics processing function, such as described in column 5, lines 44-56.

The dependent claims are allowable for at least the same reasons and include additional limitations as well. In view of the foregoing amendments and remarks, it is respectfully submitted that the application is now in condition for allowance. The Examiner is invited to contact the undersigned if there are any residual issues that can be resolved through a telephone call.


The Commissioner is hereby authorized to charge any appropriate fees to Deposit
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